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Date: October 4, 2007

Patent N2 Towers 0-02-141.01; 2641-95 MDP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventors:	Richardson et al.	Title:	System and Method For Suppressing Fires
Serial No.:	10/672,169	Examiner:	Mr. Dinh Q Nguyen
Filed:	September 26, 2003	Art Unit:	3752

AMENDMENT AND RESPONSE

Commissioner for Patents
PO Box 1450,
Alexandria, Virginia 22313-1450

Dear Sir:

This is in response to the outstanding Official Action dated April 13, 2007 issued in respect of the above-identified application.

Enclosed herewith is a Petition for a Three-Month extension of time for response to the Official Action.

Claims 2-5, 7 and 15-20 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 7,028,782 to Richardson. Claims 11 -13 have been rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of the Richardson patent and U.S. Patent No. 5,423,384 to Galbraith et al.

A terminal disclaimer limiting the term of a patent issuing from this application to the term of U.S. Patent Application Serial No. 10/286,590 was filed with the amendment dated December 9, 2005. U.S. Patent Application Serial No. 10/286,590 was granted as the U.S.

Patent No. 7,028,782 to which the Examiner now refers. As such, the nonstatutory obviousness-type double patenting rejections are not currently applicable. Withdrawal of the nonstatutory double patenting rejections is respectfully requested.

Claims 2-5, 7, 11-13 and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,024,889 (Holland et al.) in view of U.S. Patent No. 3,972,545 (Kirchoff et-al.). Claims 15 and 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Holland et al. in view of Kirchoff et al. and further in view of U.S. Patent No. 5,992,528 (Parkinson et al.). Claims 17, 18 and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Holland et al. in view of Parkinson et al.

Firstly, Kirchoff et al. teach that the preferred embodiment of gas generant composition is a sodium-azide based composition (see Column 2 lines 63-66). Thus, Kirchoff et al. teach the opposite of "generating a fire suppressing gas mixture from at least one **non-azide** solid propellant chemical". Furthermore, while Kirchoff et al. disclose a pH neutralizing material and sets as a preferred embodiment a powdered iron sulphate for this purpose, such pH neutralizing forms water. Kirchoff et al. do not disclose any filters that are capable of filtering water vapour as recited in claim 3 of the present application. This is evidenced by the disclosure in Kirchoff et al.'s Column 4, lines 5-6 where it is stated that "**The gases thus produced then pass through the fine filtering screens 22...**". This of course indicates that the filtering screens 22 are not suitable for filtering "at least a percentage of a second gas from the first fire suppressing gas mixture..." as recited in claim 1 of the present application. Furthermore, the layers of course screens 24 provided by Kirchoff et al. are stated in Column 4 lines 5-9 to act as spacers, but are not disclosed to perform any filtering of at least a percentage of a second gas.

The Examiner states that the Application has not disclosed that filtering out a percentage of water vapor, or filtering out a percentage of carbon dioxide, or filtering out a gas provides an advantage, is used for a particular purpose, or solves a stated problem. Applicants strenuously disagree. In at least paragraph [0038] of the present application there is described the advantages of filtering water vapor **so that the gas introduced into the room will not form any substantial amount of liquid water when introduced into the environment of the fire. Preferably, the concentration of water vapor in the environment of the fire is maintained so**

that the water vapor is maintained above its dew point. Furthermore, given the context of the entire description, where the invention is directed to suppression of fires in normally occupied spaces (i.e. those with people in them), the advantage of filtering up to all of the carbon dioxide is clear. Kirchoff et al. simply do not have to deal with such challenges because that patent inflates safety cushions and does not have anything to do with fire suppression in normally occupied spaces.

The Examiner states that Holland et al. and Kirchoff et al. teach all the limitations of claims 15 and 16 except for a pre-packed solid propellant. The Examiner states that Parkinson et al. rectifies this deficiency. However, as discussed above, neither teach at least one filter for filtering at least a percentage of one gas from said fire suppressing gas mixture. Furthermore, Parkinson et al. would not work with Kirchoff et al. because Kirchoff et al.'s course screens would remove the "powdered fire suppression material" from entrainment and render Parkinson et al. unable to actually suppress a fire. Non-obvious modifications to the Kirchoff et al. and Parkinson et al. systems would be required to arrive at the systems that are claimed in the present application.

With great respect, Applicants submit that the Examiner is employing "hindsight" in order to render the obviousness rejection. The Supreme Court has frequently warned against the use of "hindsight" in determining obviousness (see for example Diamond Rubber Co. v. Consolidated Rubber Tire Co., 220 U.S. 428 (1911)). As noted In re Mahurkar Patent Litigation (1993) 831 F. Supp. 1354, 28 U.S. PQ 2d 180 (N.D. ILL. 1993.), Judge Easterbrook noted that "decomposing an invention into its constituent elements, finding each element in the prior art, and then claiming that it is easy to reassemble these elements into the invention, is a forbidden ex post analysis".

The present application is directed to an apparatus and method that generates a fire suppressing gas mixture from a solid propellent and either filters the gas mixture or otherwise delivers only a fire suppressing gas mixture into a space. Various embodiments are claimed. Filtering of other agents such as solid particulates or otherwise delivering only a fire suppressing gas mixture into a space lends the claimed apparatuses and methods to "clean agent" applications, whereas in stark contrast the prior art requires delivery of chemically active

powders (i.e., potassium iodide, baking soda, silicon etc.) which can be toxic, and without fail remains on objects in a space after the fire (i.e. not clean agent systems). Furthermore, in some claimed embodiments a percentage of water constituent is filtered from the fire suppressing gas mixture therefore reducing the chance that damaging dew would form on objects in the space during fire suppression. Furthermore, because the claimed apparatuses and methods are for use in normally occupied spaces, it is important and in some situations critical to remove particles from the fire suppressing gas mixture so that they do not cloud a person's vision when they are exiting the space.

It is still the position of the Applicants that the cited art to Holland et al. and Parkinson et al. are directed to aerosol systems (i.e. those systems that deliver solid particulates entrained in a gas) and therefore do not deliver only a fire suppressing gas mixture into the space. As can be imagined, delivery of, for example, baking soda in any chemically-acting significant quantities would immediately cloud the vision of a person attempting to exit a space, and furthermore would no doubt remain as a "dust" on objects in the space after fire suppression. Because of the residue, none of these systems could comply with standards set for "clean agent" systems, and because inherently a person's vision would be occluded due to entrained particles (i.e. baking soda, potassium iodide etc.), none of these systems could comply with standards set for normally occupied spaces.

Furthermore, Parkinson et al. relates to compressed gas cylinder fire suppression technologies, and not to generating of fire suppressing gas from a solid propellant chemical.

U.S. Patent No. 6,024,889 to Holland et al. discloses a chemically active fire suppression composition. A fire extinguishing apparatus 10 is shown in Figure 1 and includes a gas generator 12 and a passageway 14 attached to the bottom 22 of the gas generator 12. An electric initiator 18 is attached to the top of the gas generator 12 to ignite chemically active fire suppression composition 16 when a fire is detected. After ignition, chemically active and physically active fire suppressive gases are released into the fire when seal 20 attached to the bottom 22 of the gas generator 12 is broken due to the pressure inside the generator 12. The chemically active and physically active fire suppressive mixture comprises potassium species such as potassium iodide (symbol: KI; see Column 5, lines 17 to 62).

Because Holland et al.'s chemically and physically active fire suppressive mixture contains both gas and solid particulates, it is an aerosol (i.e. a mixture of gas with functionally substantial amounts of solid particulates) and not a gas mixture (a mixture of gases with no, or at least functionally insubstantial amounts of, solid particulates).

Furthermore, none of the cited art provides a diffuser. The Examiner's statement that it is an obvious design choice to a person of ordinary skill in the art does not take into account that Kirchoff et al. would have no need for a diffuser since it simply provides its output into an inflatable safety cushion. Furthermore, neither Parkinson et al. nor Holland et al. provide this element. With reference to Figure 3 of the present application, in which fire suppression towers that embody the claimed invention, within a normally occupied space are shown, the diffusers are used to direct the fire suppressing gas that has been generated into the room. Depending upon where such a tower is disposed, a particular type of diffuser is employed. It is not apparent and is at best unclear in the cited art to Parkinson et al. or Holland et al. without the benefit of hindsight just how such a diffuser would be advantageous to those inventions.

One of the advantages of the present invention is that the apparatus can be sized sufficiently to add a large number of units to suppress fires in a very large space. Multiple units spaced throughout the compartment may be warranted to provide better mixing and inert gas coverage in the space. Various diffusers are shown in Figures 2a to 2d which act to direct and spread out the fire suppressing gas mixture. A diffuser acts to overcome the requirement that the fire suppression apparatus be pointed by a person into a space. The diffuser directs the fire suppressing gas mixture, permitting the apparatus to overcome limitations of a room for example when placed in a corner such that it does not have to rely on the particular geometry of a corner of the room to direct the fire suppressing gas mixture to the fire. The diffuser acts to perform this action.

It is respectfully submitted that all rejections of the claims under 35 U.S.C. § 103(a) be withdrawn for the reasons given above.

It is respectfully submitted that this application is now in order for allowance, and action to that end is respectfully solicited.

Respectfully submitted,

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